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D. Perkins
8/23/02

PATENT
81868.0025

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

MAYUMI, Eiji

Serial No: 09/778,270

Filed: February 6, 2001

For: MOTOR WITH STATOR HAVING
INNER CORES AND OUTER
CORES

Art Unit: 2834

Examiner: PEREZ, Guillermo

I hereby certify that this correspondence
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872-9318, Examiner G. Perez, Art Unit
2834 Commissioner for Patents
Washington D.C. 20231, on
August 21, 2002

Date of Deposit

Joyce Hegeman
Name
Joyce Hegeman
Signature

August 21, 2002
Date

AMENDMENT

Box Non Fee Amendment
Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In response to the Office Action dated May 21, 2002, please amend the above-referenced application as follows:

IN THE CLAIMS:

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Please add the following new claims 7-11:

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7. (New) A motor defining an axial direction, the motor comprising:
a plurality of core pairs, each of the core pairs consisting of an inner core and an outer core, arranged next to each other along the axial direction such that the inner cores are in contact with each other;
a coil wound around each of the core pairs; and
a case formed from a magnetic material that covers the coils wherein the case is welded to at least the inner cores and the outer cores to form two independent magnetic circuits formed by the inner cores, the case, and the outer cores;

*A1
Claim 8*
wherein the motor is a stepping motor.

8. (New) A motor according to claim 7, wherein each of the inner cores and each of the outer cores has teeth-like poles;

the teeth-like poles on the inner cores and the teeth-like poles on the outer cores are alternately disposed to face a rotor magnet of a rotor that is disposed inside the plurality of core pairs; and

the case is commonly affixed to outer circumference sections of the inner cores and outer cores that form the plurality of core pairs.

9. (New) A motor according to claim 8, wherein the case is formed from a curled thin plate.

10. (New) A motor according to claim 9, further comprising connection terminals configured to supply current to the coils connected to the inner cores and the outer cores, wherein the case has an arc-shape that defines an opening for the connection terminals.

11. (New) A motor according to claim 10, wherein the arc-shaped case has end sections, and the case and the inner cores are welded at welding spots at the end sections of the arc-shaped case and at a midpoint in the circumferential direction between the end sections of the arc-shaped case.

REMARKS

The application was filed with six claims. Claims 1-6 were rejected in a prior Office Action, but these rejections were traversed in Applicant's previous response. Claims 1-6 were rejected again in the most recent Office Action. These rejections are traversed again in this paper, and new claims 7-11 are added as well. Claims 1-11 are thus pending for examination in the application, and reexamination and reconsideration of the most recent rejections are therefore respectfully requested.

The claims are directed to a novel configuration for an electrical motor. Independent claim 1 requires that the motor have "a plurality of core pairs, each of the core pairs consisting of an inner core and an outer core." The claim further requires "a case formed from a magnetic material that covers the coils wherein *the case is welded to at least the inner cores.*"

Claim 1 stands rejected as allegedly obvious and unpatentable over Hanazumi in view of Takehara. Respectfully, the Examiner has not made out a proper *prima facie* case of obviousness in the Office Action, and reconsideration and withdrawal of this rejection are therefore requested.

As Applicant argued in his response to the prior Office Action, Hanazumi does not teach welding a case specifically to the *inner* cores of a motor having both inner and outer cores. This point was seemingly accepted by the Examiner, because the Examiner attempts in this Office Action to remedy this deficiency in Hanazumi's teachings by resorting to a second reference -- Takehara.

A *prima facie* case of obvious requires the Examiner (a) to identify *all elements* of the claims in the alleged combination of references, and (b) to identify information in the prior art that would have motivated one of ordinary skill in the art to make the allegedly obvious combination. With respect, the Examiner has not satisfied either of these in the current rejection.

Hanazumi describes a motor with a case fitted over inner and outer cores, but does not teach welding the case specifically to the *inner* cores. The only reference to welding in Hanazumi, is this:

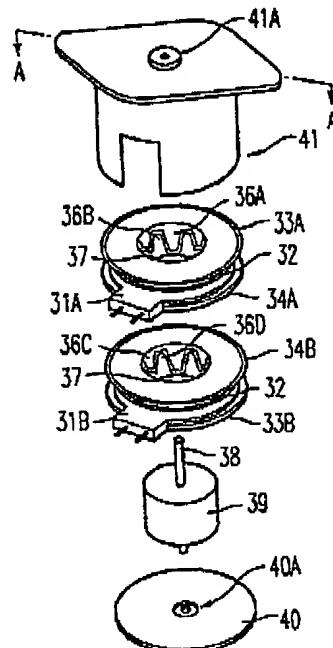
Since the cup frame 41 is formed by press working, its production cost is high and the cap tends to have a tapered shape. Therefore, the inside face of the cylindrical section comes in insufficient contact with the yokes 31a and 31b to achieve a precise torque generation and stepping angle. Further, an additional assembly step, such as cramping or welding, is required for contact of the cup frame with the yokes.

(*Hanazumi*, column 1, lines 56-63.)

This passage refers to Fig. 6 of the Hanazumi patent. That figure is reproduced here, at right. Hanazumi thus teaches motor configuration that includes a pair of yokes 31A and 31B. These yokes include inner cores 34A and 34B, and outer cores 33A and 33B. A case (cup frame 41A) is fitted over these cores, and held in contact with the yokes by "cramping [sic, crimping?] or welding." Hanazumi does not specify, though, where the cup frame is crimped, crimped, or welded to the yokes. In particular, Hanazumi does not teach that the cup should be welded specifically to the *inner* cores, as independent claim 1 requires.

Hanazumi's deficiency is not remedied by Takehara. Regarding Takehara, the Examiner alleges the following:

Takehara discloses that the arc-shaped case (2) has end sections, and the case (2) and the inner cores (3) are welded at welding spots at the end sections of the arc-shaped case (2) and at a midpoint in the circumferential direction between the end sections of the arc-shaped

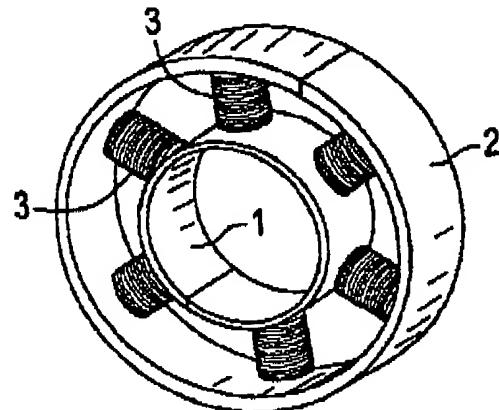


case (2). Takehara's invention has the purpose of simplifying the manufacturing of the motor.

It would have been obvious at the time the invention was made to modify the motor of Hanazumi *et al.* and provide it with [the] welding configuration disclosed by Takehara for the purpose of simplifying the manufacturing of the motor.

Office Action, at page 3.

This passage from the Office Action is potentially misleading or factually incorrect in at least two respects. First, the motor cores in the Takehara reference are not "inner" cores, at least not in the sense that term is used in Applicant's claims. Takehara's motor cores are depicted, e.g., in Takehara's Fig. 1, which appears here, at right.



In the claims, the "inner" cores are distinguished from other, "outer" cores, with at least the inner cores, specifically, being joined by a weld to the electrically conductive outer case. The motor cores ("pole pieces") 3 in Takehara are disposed inside a case ("outer cylinder") 2 so it is perhaps reasonable to call these cores "inner" cores on that basis. There are no other, "outer" cores in Takehara, though, and there is no teaching in the patent that, between the inner and outer cores, the case should be welded specifically to at least the inner cores. Takehara thus fails to provide a teaching for the limitation of claim 1 that is not satisfied by Hanazumi's motor, and the Examiner's allegation of obviousness must fail for that reason alone.

Even if the Takehara patent did teach welding *inner* (as opposed to outer) cores to a case, there would still be no motivation to combine this teaching with that of Hanazumi to yield a motor covered by Applicant's claim 1. Recall that Hanazumi teaches a motor with inner and outer cores, and that "an additional assembly step, such as cramping or welding, is required for contact of the cup frame (case) with the

yokes (of which the cores are a part)" -- but not that the case should be welded specifically to the inner cores.

The Examiner alleges that "It would have been obvious at the time the invention was made to modify the motor of Hanazumi *et al.* and provide it with [the] welding configuration disclosed by Takehara *for the purpose of simplifying the manufacturing of the motor.*" *Office Action*, at page 3 (emphasis supplied). Welding the case specifically to the inner cores, though, would not in any way simplify the assembly already taught in Hanazumi. Hanazumi by itself teaches that the assembly procedure should include a step of cramping (crimping?) or welding, but does not specify the precise location at which this should be done. It does not simplify things any to say that the weld should be provided at the inner cores, instead of or addition to somewhere else, and one would not expect that welding would be any more simple or straightforward than cramping or crimping. The motivation alleged by the Examiner for combining Takehara with Hanazumi thus does not really exist, and the Examiner's allegation of obviousness in connection with claim 1 must fail for that reason as well.

The Examiner states in the *Office Action* that:

Referring to claims 1-6, no patentable weight has been given to the method of manufacturing limitations (i.e. "welding") since "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

Office Action, at pages 3-4 (citation omitted).

While Applicant has no quarrel with the Examiner's proposition in the abstract, Applicant submits that this principal has been incorrectly applied in this case. Claim 1 includes a limitation that requires that "the case is welded to at least the inner cores." Contrary to the Examiner's suggestion, this is not a product-by-

process limitation. Granted, use of the term "welded" at least implies that at some point someone or something must have performed an action of welding the parts together. But that does not make the limitation a product-by-process limitation -- or else nearly every limitation would be such. To say that two elements are "aligned," for example, at least implies that some agency must have aligned them. Claim 1 specifies that inner and outer cores are "arranged next to each other" -- implying that someone must have arranged them that way -- and that "a coil [is] wound around each of the core pairs" -- which at least suggests that someone must have wound the coils around the core pairs. None of these are proper product-by-process limitations, however, at least not in the sense that that term is used and applied in the case 1/ the Examiner relies on in support of his rejection.

Even granting for the sake of discussion that Applicant's welding limitation might be a product-by-process limitation. The Examiner has still erred to the extent he has afforded that limitation "no patentable weight." *In re Thorpe* applies only where a prior art product is the same as the claimed product or so close as to make it obvious. As described more fully above, the Examiner has not here identified any combination of prior art that would yield an assembly the same as that of claim 1, and none that would make such an assembly obvious to one of ordinary skill in the art.

Applicant submits therefore, and with due respect, that the Examiner has failed to make out the requisite *prima facie* case of obviousness with respect to claim 1. In particular, the Examiner has not identified prior art that discloses all of the limitations of the claim in question, and the Examiner has not shown any motivation, within the prior art itself, that would have led one of ordinary skill in the art to make the combination that the Examiner suggests. Applicant therefore respectfully requests that the rejection of claim 1 be withdrawn and a notice of allowance issued without further delay.

¹⁴ In *In re Thorpe*, the claim in question read, simply, "The product of the process of Claim 1," where claim 1 was a method claim written in Jepson form. See,

Claims 2-6 all depend in some way from claim 1, and those claims should thus all be allowable for the same reasons as those discussed immediately above in connection with that claim.

Claims 7-11 are added in this paper. Claim 7 is an independent claim, with claims 8-11 all depending in some way from it. New claim 7 includes a limitation substantially the same as that discussed above in connection with claim 1 – that “the case is welded to at least the inner cores” of a motor having both inner and outer cores. Independent claim 7 and dependent claims 8-11 should thus be allowable over the cited art, and the prompt allowance of those claims is therefore respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6711 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: August 21, 2002

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